

**Abstract**

A test system is provided for monitoring a WDM transmission system that employs at least one optical amplifier. The test system includes a test signal generator generating an optical test signal and an optical coupler combining the test signal with at least one data signal located at a given channel wavelength. The optical test signal is located at one or more channel wavelengths distinct from the given channel wavelength and which corresponds to an idler channel wavelength that is employed to maintain a prescribed operational state of the optical amplifier. The test system also includes an optical performance monitor receiving at least a portion of the optical test signal.